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THE GENESEE FARMER.

SATURDAY, JULY 21, 1838.

SMUT IN WHEAT.

There are few things in the history of agriculture, that more clearly mark the uncertainty that has attended its operations, than the various and conflicting opinions entertained with regard to the production of smut in grain; and there are few questions at the present day on which farmers are less agreed, than on those relating to the cause and prevention of this formidable enemy to the wheat grower. From the earliest ages, the mere theorist and the actual tiller of the soil, the man of science and the practical cultivator, have directed their attention to this matter, but, as yet, with very little success, except so far as concerns the discovery, in the use of lime, of a partial preventive of this fungus of plants. Wherever wheat is known, smut exists; in Russia, Italy and New Holland, it infests grain; and Virgil, Pliny and Columella, attest its existence at that time. And it is a curious fact, as showing how little there is new under the sun, that soaking wheat in urine as a preventive of smut and other diseases, was recommended before the Christian era.

Dr. Hales suspected the cause of smut was to be found in bruises of the grain, but his series of experiments go rather to refute than establish such an opinion. Wolfius thought that smut proceeded from a monstrosity of the embryo seed; but this supposition must be incorrect, as the male flowers of certain plants are affected by it, and such flowers have no embryo. Duhamel considers it as a parasitical plant, or fungus, rapidly propagated from infected seed, and as a preventive recommends leys of lime, ashes, saltpetre, salt, &c. In the Bath papers it is maintained with much ability, that smut proceeds from the want of due impregnation, in consequence of the fecundating farina becoming faulty; putrefaction and death takes place in the embryo seed, and smut is the result. The observations of Spallanzani go to support this opinion, for he discovered that the seed is produced anterior to impregnation, which can only take place when the flower is open, and the dust of the anther fully ripe. In this case of non-impregnation, the result may be the same as in that of the egg of oviparous animals, putrefaction must ensue.—Jethro Tull ascribed this disease to moisture, and adopted his favorite system of drill husbandry as a cure. Desmartre considered it as caused by wet or damp weather during the period of flowering, by which the fecundating powder is washed away or destroyed; and we have known some farmers who have believed that simply sowing wheat in wet weather had a tendency to generate the disease.

Linnæus, Walker, Somerville, and other naturalists, are of the opinion that smut is caused by insects, and the fact that certain pickles are preventives of the disease, would give countenance to the belief. Somerville, by using glasses of high power, conceived that he discovered the specks on the smut balls were real insects, resembling wood lice in shape; and that when infected or infested grains come in contact with sound ones, they are inoculated so as to render the production of smut certain. The experiment of rubbing sound grains with the smut powder was tried by him repeatedly, and the product of such grains rarely failed of being smutty. M. Aimen contends that smut is caused by an ulcer or disease of the blossom, and that though smut is infectious, infection is not the only cause, as wheat taken from the same ground, and the same sheaf, and sown without steeping, produced in some fields clean wheat and in others smut. Lisle, in his Observations on Husbandry, thinks that smut proceeds from a total want of sap at the root of the plant, and that the disease only overtakes the grain when well advanced towards fullness. Home, on the contrary, maintains that it springs from excess of juices; that it may be communicated to sound grain by the powder, and that pickling is a remedy.

Sir H. Davy is of the opinion, that smut is produced by a small parasite or fungus on the plant or grain, as chemical analysis shows the smut powder to be composed of ingredients similar to those of the common puff ball, (*Lycoperdon,*) and thinks that without some organized structure, so complete a change could not be effected in the constitution of the grain. In Chalmer's Cyclopedia, smut is attributed to rankness and fatness of soil, occasioned by the use of fresh dung or other forcing manures. Wildenow says that smut proceeded from a fungus, which once getting foot-hold, multiplies with such rapidity as to occupy the whole kernel, or the whole ear; but Bauer ascertained it to be, as he thought, a morbid swelling of the ear, and not at all connected with the growth of a fungus. Jussieu says, the proximate cause of smut may be attributed to the infection of the seed by the dust of the smut ball, (*Lycoperdon glabrum,*) in whatever manner the disease may be transmitted from the seed grain to the ear. The author of the Yorkshire Farmer maintained that smut was caused by a worm, and that it was not infectious in the least degree, an opinion in which, so far as we can learn, he stands alone.

If the cause of smut in grain has been so variously stated, the means of prevention may well be supposed to have been equally diversified. To enumerate all the prescriptions that have been given, would be useless; there is scarcely an article possessing saline, caustic or poisonous properties, that has not been tried, and its qualities defended. Solutions of common salt, alum, vitriol, verdigris, arsenic and potash, have been recommended; as have decoctions of tobacco, hellebore, aloes, and multitudes of other ingredients. But the wash or pickle that has obtained the most favor, both in Europe and in this country, is a brine of salt strong enough to float an egg, and the seed, after being thoroughly washed in this, and drained, is rolled in quicklime, and sown with as much of the lime adhering as possible. The Messrs. Culley, of England, most extensive and successful wheat growers for forty years, used stale urine without any preparation, and with uniform success. A tub holding a bushel of wheat, with a tin bottom pierced with holes, is immersed in the tub containing the urine, and after the wheat is repeatedly stirred and the light grains skimmed off, it is thrown on a floor, encrusted or dried in quicklime, and sown immediately. It is known by experience, that the corrosive quality of the alkali with which stale urine abounds, will destroy the vegetative quality of seeds, if any considerable time elapses between the preparation and the sowing.

Various experiments, or series of them, have been made to test the efficiency of the several preparations for seed wheat, one of the fullest of which we copy from the Quarterly Journal of Agriculture, for which they were communicated by Mr. Donaldson of Leicestershire.

Experiment No. 1.—Pure wheat sown without any preparation, produced 866 sound ears and 2 smutted; in the proportion of 433 sound ears to one of smut.

Ex. No. 2.—400 grains of wheat impregnated with smut powder, and sown without any preparation, produced 210 sound ears and 463 smutted; proportion, one sound ear to two smutted.

Ex. No. 3.—400 grains impregnated with smut, and washed in chamber ley, and limed, produced 700 sound ears and 60 smutted; proportion, 11½ sound to one smut.

Ex. No. 4.—400 grains impregnated with smut, and washed with chamber ley, produced 560 sound ears and 106 smutted; proportion, five sound to one smutted.

Ex. No. 5.—400 grains impregnated with smut, steeped in arsenic and water, and limed, produced 600 sound ears and 41 smutted; proportion, 14 sound to one smutted.

Ex. No. 6.—400 grains impregnated with smut, and rubbed with dry arsenic, produced 538 sound ears and 146 smutted; proportion, four sound to one smutted.

Ex. No. 7.—400 grains impregnated with smut, and steeped in vitriol and water, and limed, produced 635 sound ears and 40 smutted; proportion, 16 sound to one smutted.

Ex. No. 8.—400 grains impregnated with smut, and steeped in copperas and water, and limed, gave 205 sound ears and 445 smutted; proportion, one sound to two smutted.

Ex. No. 9.—600 sound grains pickled from a badly smutted crop, and sown without any preparation, produced 612 sound ears and 53 smut ones; proportion, 11½ sound to one smut.

Ex. No. 10.—600 sound grains impregnated with chamber ley, and limed, produced 757 sound ears and 16 smutted; proportion, 47 sound to one smutted.

Ex. No. 11.—200 grains impregnated with smut, and sown without any preparation, produced 67 sound ears and 375 smutted; proportion, one sound to five smutted.

Ex. No. 12.—200 grains impregnated with smut, and prepared with chamber ley, and limed, produced 374 sound ears and 43 smutted; proportion, nine sound to one smutted.

Ex. No. 13.—200 grains impregnated with smut, and steeped in arsenic and water, and limed, produced 443 sound ears and 44 smutted; proportion, 11 sound to one smutted.

Ex. No. 14.—200 grains impregnated with smut, and rubbed with dry arsenic, produced 317 sound ears and 43 smutted; proportion, eight sound to one smutted.

Ex. No. 15.—200 grains impregnated with smut, and steeped in vitriol and water, and limed, produced 430 sound ears and 40 smutted; proportion, 11 sound to one smutted.

Ex. No. 16.—200 grains impregnated with smut, and steeped in copperas and water, and limed, produced 260 sound ears and 190 smutted; in the proportion of 1½ sound ears to one smutted.

These experiments, and they were made by Mr. Donaldson with great care, agree in the main with those instituted by Sinclair and Marshall, and of those made by Arthur Young. The very great difference in sowing grain pure, and free from the contagion of smut, and that infected, both without preparation, as shown in the two first experiments, is decisive on the point of infection, and should induce every farmer to use his utmost endeavors to sow none but pure seed.

Of the preparations used, washing in stale urine or chamber ley, and then liming, was the most effectual. Vitriol and water, followed by liming, was the next best; while copperas and water was the worst of all. The difference between brine and chamber ley, followed by liming, and copperas and water with liming, in the prevention of smut, is as great as we once found that between brining and drying in lime, or in plaster. In our experiment, there was none in the wheat limed, but the slightest sprinkling in that sown without preparation, while the seed dried in plaster produced a most abundant crop of smut. Such experiments require to be repeated with great care, before they can be pronounced decisive; yet they serve to show the great principles on which farming should be conducted, and assist in guiding to the best means of producing so desirable a result.

DUCKS.

It is stated in a New-York newspaper, "that several of the farmers on Long Island who raise large numbers of ducks, have had nearly their entire flocks of young ones destroyed, by a red insect named the 'Lady bug:' a *post mortem* examination led to the discovery, as on opening the body, the bugs still living were taken out by the handful." So far as our observation has gone, insects of all kinds, with perhaps a single exception, have flourished abundantly the present season, the high temperature of June having proved as propitious to their increase, as to the rapid growth of vegetation. The exception to which we have alluded, is the common striped bug, so fatal to cucumbers and squashes, of which we have not seen a single one the present season.

On Soils—Geological Report.

The following remarks, which we copy from the Geological Report made at the last session of the Legislature, are so replete with truths important to be understood by every farmer, and so strongly enforce the sentiments we have endeavored to inculcate in the Genesee Farmer, that we give them a place with pleasure. Each successive annual Report, adds testimony to the talent and persevering industry of the gentlemen engaged in making the survey, and the benefits that must result from such an estimate and development of our resources. We hope our able correspondent, T., will continue his scientific and valuable notices of the Report, until he shall have thoroughly unfolded its merits as well as have detected its errors, should any exist. We may add in this place as a location of a brine spring not noticed in Prof. Beck's paper, that several years since we saw a beautiful specimen of salt made from a spring on the west shore of the Otisco Lake, in Onondaga county. Quite an excavation was made in the rock, (the common shale of the region,) but as it was immediately on the margin, and lower than the surface at high water, the difficulty of keeping out the water of the lake, and not finding the necessary quantity of brine, caused it to be abandoned.

The remarks are from the pen of Prof. Emmons, the Geologist of the Second Geological District of the State, and prefatory to a notice of the county of St. Lawrence.

"Previous to entering upon the subject of the soils of this county, (St. Lawrence,) I shall state some facts and principles in relation to them in general, which are established by experience and observation. In the first place, in relation to productiveness, it may be said, that a soil is productive in proportion to its right adjustment to the four following circumstances: 1st. Its texture and cohesion. 2d. Its composition. 3d. Its substratum. And 4th. Its elevation. All of which is to be considered inde pendent of the quantity of animal and vegetable substances they contain.

1st. The texture of the soil must be loose to permit the free penetration of the roots, and the access of air and water. When its texture is so close that the air is excluded, and the fibres of the roots prevented from penetrating downwards, the soil must be unproductive of the valuable vegetables.

2d. There are certain elements that enter into the composition of soil, the presence of which are necessary to insure its value to the husbandman. These elements are the following earths: silex, alumine and lime. The great predominance of the first makes a soil too open and loose; and of the two last, too close and tight. Beside these mechanical effects, they are each of them necessary in the economy of vegetation. In confirmation of this statement, I will quote the analysis of the ashes of several vegetables.

	Silica.	*Lime.*	*Alumine.*
Wheat,	48	37	15
Oats,	68	26	6
Barley,	69	16	15
Rye,	63	21	16
Potatoes,	4	66	30
Red Clover,	37	33	30

In addition to this, I will quote farther the analysis of some of the most productive soils, which will serve as standards of comparison in estimating the value of any soil for agricultural purposes. The first was a good wheat soil, and contained in one hundred parts,

Coarse silex,	30
Silica,	26
Alumina,	14
Carbonate of lime,	30

Another fertile soil gave of

Silica,	77 to 79
Alumina,	9 to 14
Carbonate of lime,	5 to 12

The most fertile soil formed artificially by the mixture of different earths, yields, on analysis,—

Coarse silex,	25
Silica,	21
Alumina,	16
Carbonate of lime,	37

Nothing of course is said of the quantity of water, or of vegetable and animal matter present in the soil, as the inquiry related solely to the earths necessary to fertility.—From these analysis it appears, that those earths enter directly into the vegetable economy, and are, therefore, essential to the perfection of vegetable products.

It does not appear from these, or any experiments which have been made, that a soil must consist of certain elements in a definite or certain given proportion, so far as they are necessary to the economy of vegetables, but only that they should exist in a sufficient proportion to supply the wants of vegetation. It is evident that where lime is in a small proportion, it would be removed in the course of a few years entirely, to supply the wants of the vegetable kingdom, as it enters directly into the vascular system.

3d. The substratum influences greatly the productiveness of soil. If it is a tenacious clay, it will be too wet and cold. The natural productions of such soils, are coarse grasses, such as the caricos and cyperoidæ, which are of but little value to cattle; and woody plants, whose stems are small, as the alders and birches, all of which are useless for feed. This is a defect which cannot of course be remedied by manuring. Such a soil retains with tenacity, a certain quantity of water, generally to saturation, and at the same time suffers the falling showers to pass over it without penetrating to much depth, or holds it in the soil above, if the outward draining is insufficient, forming under these circumstances a condition unfit for tillage. The evaporation from the surface of marshy districts, preserves the temperature at a low state; a state to which some vegetables are fitted constitutionally, but to which others, the more useful, can never adopt themselves.

4th. Elevation. The diminished effect of the sun's rays, together with the exposure to the winds in elevated districts, prevents the development of vegetable forms, and at certain points, vegetation ceases for the want of heat. The most useful vegetables cease to flourish, or come to maturity, far below the line of perpetual frost. In this latitude, corn and some other vegetables will not come to maturity at 1,500 feet above the tide. The influence of latitude is the same as elevation.

There are three other points on which I will dwell for a moment. The first is *how* a soil naturally good may deteriorate; and the second, *how* it is to be restored; and third, *how* a soil defective in certain points is to be treated.

1st. A soil may deteriorate, by the consumption of one or more alkaline earths it contains, as lime or magnesia. This is more likely to occur on lands from which the crops are removed, and which are in a high state of cultivation. This may be especially true, where the crop has been of wheat or potatoes for a succession of years.

2d. Constant cultivation has a tendency to reduce the soil to an impalpable state, or it will become in time, without the application of proper correctives, too compact.

3d. Cultivated lands, or those under the plough especially, are exposed to washing, by which that portion of the soil in a state fit for absorption into the vegetable structure, is carried off, and removed to levels more or less remote.

On the second point, *how* a soil is to be restored to its original state when exhausted by cultivation, it is self-evident, that the element or elements, which are wanting, are to be restored artificially. Of the manner how we may ascertain what is wanting, independent of analysis, it is sufficient to remark, that so far as the food of plants is concerned, there is in most soils, and probably always will be, a sufficient quantity of silex and alumine; and as the alkaline salts exist in the smallest proportion, it is probable, that when a farmer finds his crops diminishing in quantity, notwithstanding the use of stimulating manures,* the defect is owing to the exhaustion of the alkaline earths, and these are the elements which must be supplied, either in the form of gypsum, carbonate of lime, or of quick lime.†

3d. In the last place, *how* a soil naturally defective in any of its elements, is to be treated, may be answered as above, viz: by an artificial supply of the deficient earths. If it is argillaceous to an excessive amount, sand must be used; if sand is in excess, clay or loam. Experience has proved that no soil can be productive by the use of manures; neither can it be preserved to an indefinite period from wasting its strength by them alone.

"* It would seem from the following statement, that the value of carbonaceous matter, in promoting productiveness, is not sufficiently known. It was furnished me by a gentleman of West Port, Essex county, and may be relied on as correct. 210 feet of land, on which a coal pit had been burned, produced one bushel and 26 quarts of wheat: each kernel produced from 15 to 20 heads, and each head from 60 to 100 kernels."

† We think, in this place, Prof. Emmons has fallen into a slight mistake in the use of terms. According to Chaptal and Davy, *stimulating manures* are the alkalies and salts, substances that do not furnish actual nourishment to plants, but only excite them to take up such nourishment when offered to them. The *nutritive manures* are such, "that their juices, when dissolved in water or otherwise divided, are capable of being drawn into the organs of plants. All the vegetable and animal juices are of this description." Prof. E. unquestionably had reference to this latter class of manures, or he would not have recommended the aiding their action by lime, gypsum, &c., all stimulating manures; a process which every farmer has at times found necessary. The nutritive manures may produce a great growth of straw, for instance, but unless the earths alluded to by the Professor be present, the grain will be imperfect and worthless.

BIRDS.

We are great admirers of birds. We love their sweet music, full of joyousness and glee; we love them for their beautiful plumage and their graceful motions; we love them for the mysteries of their migrations, and because they are the first messengers to harbinger the return of spring; and we love them for the services they render the husbandman, in gathering from the air and the earth so many insects that are both troublesome and noxious.

Feeling thus kindly towards these wanderers of the air, we are utterly opposed to the prevalent system that places them under the ban of unlimited proscription, and subjects them all to a summary execution by every thoughtless boy, or worse than thoughtless, because idle, man. The barbarous and inhuman practice of gunning, so fashionable from the almost breechless urchin to the lazy biped of gray hairs, bids fair not only to destroy or drive from us some of our most beautiful birds, but to deprive the farmer of the immense advantages they were intended to confer, and certainly do confer, upon the cultivators of the soil. Our domestic animals would feel grateful, could they reason upon the matter, if, instead of killing the birds that visit us annually, we should turn our attention to their protection and increase; and it is upon the most useful of the birds, the insectivorous class, that the unmanly warfare we reprobate is principally waged.

Swift defined angling to be the management of a rod, with a worm at one end and a fool at the other: what would he not have said, had he seen one of our modern Nimrods, six feet high in his stockings, and his double barreled gun, weighing perhaps thirty pounds, toiling and sweating—such men never sweat in a good cause—after such ignoble game as a sparrow, the yellow bird, or may be the diminutive wren.

Reamur estimated that a pair of swallows, during the time of feeding their young, destroyed not much less than one thousand insects in a day; flies, gnats, musquitoes, and other troublesome creatures of that class; and the other birds that feed on insects, worms, &c. are equally industrious. Let any one see how the robin, the sparrow, or thrush, glean from the fields or the garden every worm or slug that ventures upon the surface; let them see the yellow bird, nuthatch, and other birds of this class, flitting about in the tree tops, picking off the green worms, the aphides, and the numerous depredators that prey on the leaves and flowers of the fruit garden or nursery; let them see the insignificant wren, examining every nook and crevice in search of the bee moth and similar pestilent vermin; while the swallows are gathering their food from the air; and the acknowledgment will be made, that we should afford protection instead of being in such haste to destroy.

But some may reply, birds do a great deal of mischief, and in self defence we must lessen their numbers, if not extirpate them. That most kinds of birds do occasionally transgress the limits we have been pleased to assign them, is not denied; they will sometimes help themselves to a little fruit, or a few seeds, but before the decree of extermination goes forth, before every vagabond that can buy or borrow a fowling piece is turned loose into our fields, we should carefully weigh the profits against the loss, and see whether these birds do not benefit far more than they injure. Indeed, against some of them, such as the swallow, blue bird, wren, and the fly catchers generally, even calumny itself rarely breathes a whisper; and against some others the evidence of injury is, to say the least, very equivocal.

Of all our birds, there are but two kinds upon which we have declared 'war to the knife,' and these are the cedar bird and the crow. Towards these we have something of the feelings of Nero, when he wished that the population of Rome had but one neck, by severing which he might extirpate the whole at once. The cedar bird is the most canting, begging, villainous bird, without exception, that we are acquainted with. It steals our best fruits, and offers, so far as we have discovered, compensation in no way. If other birds invite themselves to a feast of cherries or raspberries, they indulge with mode-

ration, and give us a song in return, or else assist us in clearing our trees and fields of the insects that infest them, things which the cedar bird is too lazy or too proud to do. One crow will injure a farmer more in a single season, than all the birds of prey, as they are called, inflict in a decade of years. For this mischief no extenuating plea can be urged, but that like the vultures of Cairo or Charleston, he prevents the accumulation of carrion. Farmers, however, should have no carrion. If their animals are properly treated and cared for, they will furnish but few feasts for the crow; and if animals are lost by any casualty, they will be buried in the earth, either whole or in pieces, and thus, instead of an offence to all the senses, be converted into a source of profit, demonstrating the truth of the maxim, that there is rarely a great loss without some small gain.

While, then, the public weal will be decidedly promoted by a crusade against *these* birds, we advise farmers not to disturb, or allow to be disturbed, the little songsters and fly catchers of their fields and groves. Instead of allowing idle men and boys to shoot and destroy these beautiful and useful visitants, encourage their presence and increase. There is a prejudice against one of the most vigilant and serviceable birds, the king bird, because he is accused of being a great destroyer of bees. Believing this to be in the main an error, we have examined the stomach of several, and found them to be filled with the ox fly, the large horse fly, the drone of the bee hive, and very rarely have we seen a honey bee, a working one we mean, with the other food; and the conclusion was, that an occasional bee, taken probably by mistake, should not be deemed a crime sufficient to cause his proscription. It is found, by experience, that one of the most effectual measures of precaution against the bee moth, is to induce, by preparing a suitable place for his residence, a wren to take up his abode in the bee house. Every crevice and nook will be daily searched, and the chance that the moth will gain in the interior is small indeed.

WHEAT WORM.

The time for observations on that most destructive insect has now arrived, and we are anxious to call the attention of our friends, those of our farmers who are practical as well as scientific, to the importance of the subject. The state of New-York has lost from three to five millions annually for several years past, and the evil is constantly and rapidly spreading. Owing to causes which ought not to exist, the legislature of the state have refused to aid the investigations required to develop the history, habits, and nature of this destructive insect, by an appropriation for that purpose; but this neglect should not hinder farmers themselves from endeavoring to trace the course of the depredator from the egg to the perfect insect. But few things are yet known with certainty respecting it, though its presence is readily made known by its destructive powers. That the worm is produced by a fly, is certain. Observers are not precisely agreed as to the color of the fly, but the majority describe it as a reddish fly, dipterous or two winged, the wings thrown back upon the body, and longer than that, and that it deposits its egg upon or in the kernel of the wheat while in the milk, and the worm feeds on the berry. It is not certainly known whether it is oviparous or viviparous—whether the worm is derived from an egg, or whether, like some other insects, the worm is living when deposited—but we have been inclined to think an egg was deposited, which gave birth to the worm almost immediately. The worm at first is white, and so minute as scarcely to be visible to the naked eye; but it rapidly increases and turns a reddish brown. One of the first signs of its presence on a kernel of wheat, is a mass of fine dust like matter, made from the perforations of the kernel, and within which mass it lives, very much in the manner of the worm in the pea, with the appearance and operations of which every one is familiar.

It is very desirable that every thing connected with the habits of this fly and worm should be fully understood; and to do this, it is necessary that many observers should be engaged. The first appearance of flies on the wheat, or at least of any suspicious ones, should be noted. Ears of wheat on which such flies are seen, should be carefully, and if convenient, microscopically examined. As the fly has been supposed to make its appearance on the grain at dusk, or early in the morning, the fields should be visited at these times, and any unusual flies discovered, captured if possible, and preserved for further observation. The time of the greatest danger to wheat, is immediately after it comes into flower, and before the berry gets hard, hence a few weeks or a few days, may, by early or late ripening, cause the entire safety or entire loss of a field of wheat. The effect of any preventives which may be adopted, it is hoped will be carefully noted. We should have the most confidence in newly burnt and slaked lime, applied several times during the time the wheat was in a state that rendered it liable to injury; commencing immediately after it was in blossom, and continuing the application until the berry had obtained a consistence that would place it beyond danger. Fumigating with sulphur has been recommended. Could it be brought to bear on a field, it could scarcely fail of success. Let it be tried.

[Since the above was in type, we have been informed by a farmer of Greece (the next town north of Rochester) that he has, during the present week, examined several fields of wheat in that town, in all of which he found the worm at its work of destruction. In some parcels half or more of the heads were entirely destroyed; and so far as he could judge, the work of destruction was rapidly progressing. This is, the first instance of the discovery of the operations of the worm which has come to our knowledge in the Valley of the Genesee.]

Prevention better than Cure.

When we consider the time required to renovate and render productive land once exhausted by continual and improper cultivation, and the expense and difficulty of the operation; it seems clear that the wisest course for the farmer would be, to adopt a system that would keep his land in good heart, and prevent such exhaustion, and the consequent necessity of renovation. This can be done without difficulty, if the farmer commences aright; and all those who have new farms have it in their power to avoid the evils that are now bearing so heavily on the older sections of the country, and the labor and expense of counteracting which forms such a drawback on the prosperity of the citizen.

By the rotation of crops, by using root crops with grain crops, by alternating green crops with white ones, there is abundant evidence that a farm can be kept in a productive state, and instead of exhaustion, be growing more rich and fertile. Continual cropping will destroy the best soils. There must be change or rest; it is preposterous to talk of not understanding the reason of lands growing poorer, while the suicidal course adopted by many of our farmers is persisted in.

The intervention of a growth of clover for a single year between wheat crops, though far preferable to the system of wheat after wheat, will not prevent the wearing out of the farm, or a field becoming tired of any particular crop. There must be a succession of plants that draw their nourishment from lesser or greater depths of the soil, as the tap-rooted after the fibrous; or plants that require from the earth different materials as food, such as the leguminous followed by the farinaceous. Clover is perhaps one of the best renovators of the soil; and plastered and ploughed in as a green dressing, it is one of the most valuable kinds of manure that can be applied. Some experiments have shown, that of well seeded clover of two years growth, the roots alone will weigh from nine to twelve tons per acre, thus fully establishing its value, and the manner in which this plant enriches the soil. Farms properly treated from the first will never wear out, but their productive capacities will rather increase than diminish.

Those, therefore, who have farms which have not suffered the evils of a course of cropping that has rendered much of the soils of the old settled states comparatively sterile, should be wise in time. The haste to be rich, which has led many of the farmers of Western New-York, and other parts of the grain growing states, to grow a succession of white crops on the same field, should be abandoned for a more rational course of proceeding; one which combines profits with permanent fertility, and shuns alike the old fashioned notion that grass lands should never be ploughed, or the modern injurious practice that condemns our fields to the plough without intermission.

SWAMPS.

Swamps are generally considered the most worthless and unprofitable part of a farm, when in nine cases out of ten, if they were properly treated by draining, trenching, and being freed from bogs and bushes, they might be converted into the most valuable and productive soil. What are termed swamps are usually low lands, receiving the water and the wash of the neighboring hills, and of course must be composed of the richest materials, and those best adapted to promote vegetation. The first object in reclaiming such places, and without which all other efforts will be unavailing, is to free them from the surplus water. To do this effectually, reference must be had to the extent of the swamp, the quantity of water to be thrown off, the declination of the surface, the natural outlets of the water, and the work of draining commenced on a scale commensurate with the end to be effected. If the quantity of water to be discharged is large, or if the swamp is liable to inundations, the main drain should be open, and of a size sufficiently large and deep to allow the water to flow off freely and quickly. This, as the main work, should be performed in the first place, as it will greatly facilitate the determining of the best place for side drains, and aid in their formation. If the water of the swamp is furnished by springs around the margin, a drain of a proper depth and capacity should be run around the outside, and connected with the main drain, and if springs rise in the level part, particular reference must always be had to these places in any plan of draining. Unless the quantity of water to be carried off is very large, all the drains except the main one may be covered, and of course will form no obstruction to cultivation.

When, by draining, the surface is once dried, the operation of freeing the surface from bushes, bogs, and coarse grasses, can be carried on at pleasure. When the ground is firm enough for the use of the plough, the surface may be turned carefully over, and the cultivated grasses, clover, herds-grass, red-top, &c. sown with oats or other spring grain, to form a new and fine turf for mowing or grazing. Where the plough cannot be used at first, the bushes and bogs can be extirpated with the hoe and grubber, and the cultivated grasses sown in their stead. Potatoes are an excellent crop for reclaimed grounds, rendering the surface fine, and putting it in good condition for seeding. Swamps so reclaimed make the most valuable of meadows.

There is another point of view in which the great mass of vegetable mold collected in swamps possesses a great interest for the farmer. We have, in former numbers of the Farmer, stated the great care and expense incurred in European countries, in securing the largest possible quantity of manure, by mixing with the dung of their cattle in their stables and farm yards, all the refuse straw, weeds, leaves, washings of the highways, and all other vegetable and animal matter that could be collected, that the whole might be used in enriching the soil and increasing the crops. As a deposit in the farm yard, nothing is found to exceed in value a covering of earth from a swamp. The custom in Belgium and Germany, where such a resource is available, is, when the yard is cleaned of the manure to cover it with fresh vegetable mold or swamp earth, to the depth of a foot. This earth absorbs the urine, the wash of the yard, the salts of the manure, that would otherwise flow off and be lost, and in the course of the season, or the years, becomes the most valuable and efficient of manures. No farmer who understands his true interests, will suffer the wash of his sta-

bles and yards to be lost, and there is no way in which it is so effectually prevented, as by furnishing vegetable mold to absorb it.

With some farmers in this country, who have adopted this mode of replenishing their cattle yards, the rule is to return to the yard a load of swamp mud for every load of manure taken from it to the field. As a top dressing for meadows or grass lands, this earth, impregnated with salts, is unrivaled for promoting fertility. Like all finely rotted manures, its effects are more prompt and energetic than those of common manures, but the influence is not perhaps as durable. Instead, therefore, of considering a swamp as a useless piece of ground, the farmer should look upon it as a great magazine of vegetable mold, capable, if desired, of being converted into the best of manures; or if not required for this purpose, can be made where it is, to produce the best of grasses, and make the most productive of meadow lands.

Farmer's Cabinet;—Marl.

Among the many valuable agricultural journals which have sprung into existence within a few years, the Farmer's Cabinet of Philadelphia holds a distinguished rank. It is ably conducted, has a large list of contributors, and exhibits the right spirit of improvement in the business of farming. Among the many able articles furnished for the paper we have been particularly pleased with those on the subject of Marl, which, unless we have mistaken the signature are from the pen of a gentleman equally, qualified by theory and practice to give information on this and similar topics. The use of the marls has effected an entire revolution in the farming of a large part of New Jersey, and is rapidly extending to the other sandy districts of the Atlantic coast. There can be no question but that the marls of this country contain the source of vast agricultural wealth, and the explorations of the soil by the geological surveys of the states that have undertaken this important investigation, prove that this substance can be found in most districts in the greatest abundance. Another most useful deposit has been brought to light in the same way, which promises the best results both in fertilizing and altering the texture of too tenacious soils, of which kind large tracts may be found in the states bordering on the sea coast. This substance is the *green sand;* and its effect as an improver of the soil has been well illustrated in Professors Hitchcock and Rogers' State Reports. The papers in the Cabinet to which we have alluded, will also do much towards bringing the use of these articles to the notice of the farmers of Pennsylvania and Delaware. Every day is furnishing new proof of the importance and value of our geological surveys in developing our agricultural resources; and the talent enlisted in the support of journals devoted to that great and fundamental element of national prosperity, with their increasing circulation, and consequently extended usefulness, cannot be otherwise than gratifying to every lover of his country's weal.

Sheep in Russia.

It is but comparatively a short time since the introduction of the fine wooled or merino breeds of sheep into Russia, but they are found to prosper in the middle and southern provinces of that immense empire, and present appearances indicate that Russia will ere long become one of the greatest wool growing countries in the world. Two or three years since, Dr. Schmalz, a learned German, was invited to Russia by the Emperor himself, and from his work, which contains many valuable notes on the statistics of that empire, we extract the following relating to sheep:

"If the cultivators of fine wool in Germany, could see the numerous flocks of Russia, and the immense quantity of wool they now produce, some apprehension would arise probably at the thoughts of the competition which must shortly commence. Flocks of 20,000 pure Merinoes are by no means rare in many districts of this country. The most considerable that I visited, belonged to the Countess Pusomowski; when I saw it, there were only 58,000 beasts, independent of lambs; but this was after the severe season of 1833, when food failed, and thousands of the flock were got rid of. The usual number is never so low as 60,000 merinoes. The wool of these flocks may be ranked among the best middle descriptions; it is worked up into fine cloth, in a manufactory of great extent, on the spot. The manner of treating the best quality of sheep in this flock, appeared to me to be highly judicious. It is true that wool of the greatest fineness (like the best Saxony) is not obtained, but the fleeces have a firm body and are of a large size. The great proprietors have expended much capital in forming these flocks; they give a good return, and a great quantity of the beasts, particularly rams, are sold to the interior, destined to form the commencement of new flocks. The wool produced in the south of Russia, has not yet been made fit for exportation, on account of a black dust which attaches itself to a fleece after washing. This dust gives the wool a gray appearance. It does not, however, lessen the value of the article for home consumption, as this dust washes off easily in the course of manufacture."

Dr. Schmatz gives an interesting account of his visit to the celebrated stud of Count Orlow, in the government of Woronesch. There are usually kept there 450 young mares, of which 300 are trotters destined for the road—the rest are Oriental, or English, or mixed—in all there are about 3,000 horses. The celebrated Orlow trotters are all raised in this stud. The Doctor was permitted to be present at a trotting match trial. The stallion 'Wiseborn' went over a *werst*, (more than half a mile,) in a minute, in a trot only. He was informed that this speed could be kept up for ten *wersts*, and that in lessening the speed by half, he could continue for a considerable time. None of the trotters appeared heated from rapid speed for the distance of a *werst*. After two heats at the top of their speed, there was but little appearance of distress. Count Orlow never sells a real trotting stallion; one, and one only, the Doctor was informed was granted to the Emperor for £1,200.

Old and New Husbandry.

These terms are frequently made use of in the journals of the day, and that their propriety may be fully understood, a little explanation may be necessary. Any one who recollects what the system of farming was, in most cases, some thirty or forty years since, cannot be at a loss to understand what is meant by the old system. The fields kept under the plough until fertility was so reduced as to not pay the expense of cultivation, and the meadow and grass lands left undisturbed by the plough till the valuable grasses had been crowded out, and those left only fit to starve cattle upon, explain what is understood by the Old Husbandry. The system of rotation in the cultivation of fields and crops, subjecting each alternately to the action of the plough, and by this method, giving each an opportunity to recruit; the growing of roots for feeding cattle, instead of relying entirely upon hay or grasses; and the increased application of manures; constitute the leading features of what is called the New Husbandry.

After a great variety of experiments, made with the greatest skill and care for several years, Von Thaer, one of the most unexceptionable authorities, gives as the produce of a certain farm under the old system at about $4000; while the same number of acres under the rotation system gave an annual produce of $8,500, or rather more than double. It seems somewhat like an agricultural paradox, to assert that any given quantity of land will produce more grain with cattle, than without cattle. But the reason is found in the simple axiom,—without cattle, no manure; without manure, no grain. "Fifty acres of land well cultivated and dunged, will produce more grain than 100 without manure, or 75 half manured; not only more, but *very much* more, *twice* as much, in ordinary cases." (Curran.) By the best course of rotation, part of the land that was formerly in grain is devoted to roots, such as the turnep, carrot or potato, and the greater quantity of food produced in this way enables a farmer to materially increase his stock, and consequently adds to the means of fertilizing his land to a greater degree.

The course of rotation that has been highly recommended, both in Europe and in this country, as the best for both grain and cattle, is roots highly manured; barley or oats; clover put in with the foregoing; wheat after clover. In this system of husbandry, or any similar one, the grand objects of keeping cattle and sheep, with raising grain, are combined, and made mutually to advance each other. On the old plan they were of necessity mostly kept distinct, and stock farms and grain farms were terms then made use of with much more propriety than in any well cultivated district at the present day.

Insure your Buildings.

Farmers in general have an idea, that insurance is a kind of operation with which they have nothing to do, but that it belongs to the merchant, the manufacturer, or the professional man, alone. It is true, that if a farmer's house or barns are burnt, it does not destroy *all* his property, as is sometimes the case with the merchant or the others; but he can rarely afford to lose two or five thousand dollars in his buildings, and his obligation to insure is but little lessened by the fact that his farm cannot be consumed.

If a man has a family, duty to them demands his property should be safe; if he has none, duty to the public enforces the same precaution. The property of the farmer is as liable to destruction by fire as others, and in some instances far more so. How many barns, with their newly gathered treasures of hay and grain, are annually consumed by lightning. During a single shower two years since, in two adjoining counties in Pennsylvania, no less than five disasters of this kind occurred, as recorded in the journals of that state. They were mostly filled with the newly gathered crops, and the loss was serious, probably a hundred fold more than had ever been paid by the farmers of those counties for insurance. Every farmer can recollect instances of the same kind, and the warning should not be lost.

Charity is a delightful virtue;—it blesses the giver and the receiver, and should be encouraged and extended; but while there are so many calls for the exercise of charity or almsgiving; while so many individuals, poor and needy, are constantly with us; and while the claims upon time and money are daily multiplying, we somewhat question the propriety of the practice, as such, of so liberally contributing to the aid of those who have been unfortunate in this way, who refuse to insure their buildings. The establishment of mutual insurance companies, places the means of freedom from extensive loss within the reach of every farmer, and renders the fulfilment of the obligation to place their property in safety, comparatively easy. The trifling expense, or premium, is scarcely to be noticed, when compared with the certainty that unforeseen casualties are guarded against, and that the farmer may sleep in peace.

Raise More Pork.

It is a disgrace to New-England to depend upon the south and west for pork, when apples, pumpkins, turneps, beets, carrots, oats, peas, barley, &c., all cheap and excellent food for hogs, may be produced abundantly here.—The southern pork is coarse grained, poor stuff; we would prefer turning Grahamite at any time, to eating such unsavory meat. In 1820 we saw excellent pork selling in Boston at 4½ cents per lb. Why cannot pork be made as cheap now as it could at that time? By feeding swine on apples, turneps, beets, &c. they may be kept and fattened at one half the expense they were a few years since, when their food consisted chiefly of articles that required much more expense in their cultivation. If the crops of grass should be good, which appears pretty certain from the late rains, beef will be very scarce and high in the fall, and large quantities of pork will be wanted; those farmers who have not wintered as many hogs as they can keep and fatten conveniently, may find it profitable to raise spring pigs to slaughter in the fall or first of the winter. It is thought by many that pork may be made as cheap or cheaper in this way than in wintering swine. With good keeping, especially when whey and and milk can be given as a part of the food, a pig may be made into a respectable size, and though the pork may not spend so well, yet it is of excellent quality, and costs much less than that of old hogs.—*Yankee Farmer.*

The Peach Trees in Delaware promise an abundant yield this year. On the Union Farms, near Wilmington, owned by Dr. Thomson of that place, and Mr. M. Eayre of Philadelphia, we learn that about 100 acres immmediately on the River Delaware, are now flourishing in peach trees, and that about one half will bear this year.

FARM REPORTS.

NETHERBY, CUMBERLAND, (ENGLAND.)

Management of the Home Farm.

The management of the Park of Netherby, the extent of which is upwards of twelve hundred and ninety statute acres, (independent of the woods surrounding and interspersed through the grounds,) comprehends the practical detail of a large grass and arable farm, managed on principles suited to the climate and local situation of the country, and occupied by the proprietor, not only with a view to the permanent improvement of the lands, but also to securing the largest return possible from them.

The detail is conducted by an active overseer or bailiff from one of the best-managed agricultural districts of Scotland.

The establishment consists of four regular ploughmen, each having the charge of a pair of horses; a steady elderly person, who has the charge of the granaries, and who superintends the field operations of hand-hoeing, reaping, &c.; and a park-keeper, who acts in the double capacity of superintendent of the whole grazing stock of cattle and sheep, and as butcher to the family. There is, besides, a person whose sole business it is to attend to the open and close draining of the lands about to be described, and whose services are of much consequence towards their good management. All these under servants have been very carefully selected. The female part of the establishment consists of a dairy-maid and an assistant in the cow-house. The establishment is so arranged that all hands are fully employed. All extra labor required at hay and corn harvest, and in hand-hoeing the various crops, &c. is very readily commanded from the adjoining market town of Longtown. Every account and payment incident to the establishment is kept by the overseer, and is regularly audited and settled by the agent once a month; and a copy of the monthly account is duly put into the proprietor's hands, who is thus enabled to have the real situation of his farming matters constantly under his eye.

Extra work, such as mowing, draining &c. is let by contract to laborers.

Description.—The management about to be described extends, as already mentioned, over about twelve hundred and ninety acres. The soils are of various descriptions, and consists of the following general divisions:

1st. On the banks of the river Esk, which cuts the grounds into two portions, the soil is a loamy clay on a porous bottom, and very various in point of quality, as is generally the case with all lands whose formation is the deposit or washings down of lands situated at a higher level. These lands are under permanent pasture.

2d. A mossy soil of no great extent, but of considerable depth, incumbent on clay, now irrigated meadow land.

3d. Gravelly soil, on an open bottom of gravel, technically called a rusty gravel, held in pasture or alternate husbandry; and,

4th. A clay soil of various qualities on a close till or stubborn clay subsoil, unsuited to constant pasturage, and therefore kept in alternate husbandry.

The lands consist of about 480 acres loamy clay, 28½ acres meadow, 320 acres gravel, and 462 acres clay soils.

The aspect is generally flat, but with a gentle undulating surface, and with a moderate inclination from the river which runs through the lands in a direction from N. E. to S. W. The whole lands lie compact and in a ring fence, and form together a very beautiful park, equal to any in the north of England, not only in point of appearance, but in real value, while these lands do not lie at more than from 70 to 120 feet above the level of Solway Frith. The management of each kind of soil being different, requires a distinct and particular description, as will be found in the following account.

The farm buildings at Crofthead stand very nearly in the centre of the grounds, which has been found of great advantage in their management.

Longtown.—A considerable market town, containing from 1800 to 2000 souls, through which the great road from Edinburgh to London by Carlisle passes, is situated at the S. W. angle of these lands.

No manure can be procured here except what is produced on the farm, in the farm-yards at Crofthead, and what is purchased at Longtown. Of the last—as the farmers in the neighborhood procure all they can—no great quantity of manure can be obtained. There is abundance of lime, however, to be got within four miles, at a price averaging about 3*s.* per single cart-load at the lime-kilns, or 4*d.* per imperial bushel. No chalk, clay, or shell marl is found in the neighborhood, and the chief dependence is on dung and compost made on the lands, and lime as already stated. Turneps are indeed consumed on the lands, where the soil is dry, by sheep.

A trial is just now in progress of using bone dust, as a manure for the production of turneps; and if it succeeds, as is expected, this assistant will be much used here in future.

Draining.—The first operation of management has been *in every case* to ensure a complete under-drainage, to relieve the lands from the springs by which they were surcharged, as well as attending closely to open draining. The improvement of close draining has been most effectually done by tiles manufactured on the estate, at a distance of about three miles, and in the same manner as is practiced in Staffordshire and Warwickshire. Many hundred roods of drains have been executed in this way, and with complete success. The open draining has also been a point of paramount consideration. The ditches, or main drains, have always invariably been cut out to the proper level, so as readily and freely to discharge the water delivered into them. The sides are carefully sloped back by the spade, so as to discharge the water from the ridges; and the earth so cut away, as well as all high head-ridges have been in every case most carefully mixed up with lime, repeatedly turned over at proper intervals, and, lastly, applied as a rich compost in top-dressing the adjoining lands, after being depastured for the first two or three years. It is very surprising that sloping in the sides of main drains, and open ditches, which is a means of providing an ample supply of rich manure in thousands of cases, is almost invariably neglected by the practical farmer; and that he should equally neglect to remove the high head-ridges existing in almost every field (occasioned by the repeated use of the plough,) which would be the means of enriching the adjoining lands at an inconsiderable expense. This, with ditch and road scrapings, and every possible means of increasing the quantity of putrescent manure, have been closely and successfully attended to here, and with great success; and as the application of compost so collected has been almost in all cases to pasture lands, the effect has been excellent; while the grounds, when broken up for white crops, after being so manured, have—even on very inferior soils—yielded full and fair crops. Indeed the system pursued for a number of years, of turning every particle of soil not required for the production of useful crops, into compost to be applied as a top-dressing to the grass lands has been found very beneficial.

Management of Pasture Lands.—The climate here, in common with the whole west coast of Britain, is rather wet; and considerable quantities of rain fall in Cumberland, in consequence of its proximity to the Atlantic. Dry soils therefore are of the greatest value here, and grass husbandry on many accounts is the most proper and natural for the district.

When lands are well and judiciously laid down to permanent pasture, the expense of their management is at once reduced. The local situation of this part of Cumberland, bordering on Scotland, renders it in a great measure a grazing or cattle-dealing country, and pasture land, of a good quality, is constantly in request, and yields full and fair rents, when let from year to year; or, when farmed in a run of seasons, it produces, either by cattle or sheep, a fair return to the grazier. The greatest part of the cattle and sheep sold in the great Scotch markets, in Galloway, and the north of Ireland, pass through this country to Carlisle, the great point where they change hands.

Old Grass Lands.—Around the house of Netherby a very considerable extent of old grass land exists. This has been completely under-drained; and as it was disposed to produce moss—so as to render the pasturage late in coming to maturity—a very heavy dose of *hot lime* was applied about ten years ago to the whole, with remarkably good effect; for after the first year's application, the moss eradicated, and the pasture is now unrivalled in the country. The soil alluded to is generally good clay loam on an open bottom.

New Grass Lands.—Whether on light or heavy soils, it has been the constant custom here, in the first place, to lay the lands completely dry by under-draining; then to clean and pulverise the lands completely by summer fallow or green crops; to apply all the putrescent manure that could possibly be produced or purchased at a fair price. On light soils, turneps are consumed, by sheep folded on the grounds; and on clay soils, the turneps, if any are produced, have been regularly consumed in the farm-yards, and the manure so produced has been applied to the ensuing white crop. In all cases, supposing the lands (of whatever description of soil they may consist) to be thoroughly cleaned, the course here has been to sow out to permanent pasture with the *first* white crop, and with the following variety of pasture seeds, *viz.*

If Clay Lands,

Timothy grass	Pleum pratense.
Pacey's Ryegrass	Solium perenne.
Red Clover	Trifolium pratense.
White Clover	Trifolium repens.

If Light Dry Soils,

Pacy's Ryegrass	Solium perenne.
Red Clover	Trifolium peatense.
White Clover	Trifolium repens.
Cocksfoot	Dactylis glomerata.
Rib grass	Plantago lanceolata.

Hay *is never* taken from lands intended to remain in permanent pasture. These lands, whether heavy or light soils, are constantly depastured with sheep for the first season. If clay lands, the grass is depastured from 1st May to 11th November, and if light soil, from 1st May to 1st March yearly; and no stock of any kind is admitted on either description of soil between the terms mentioned. The second year any ordinary description of stock is admitted. In the course of years it has been found necessary to break up some part of these lands, and to lay them down anew to permanent pasture: the following varieties of pasture seed are now sown and approved of here.

Clay Lands,

Timothy Grass	Pleum pratense.
Cocksfoot	Dactylis glomerata.
Meadow Fescue	Festuca pratensis.
Dog's-tail	Cynosurus cristatus.
Meadow Cat,s-tail	Pleum pratense.
Pacey's Perl. Ryegrass	Solium perenne.
Red Clover	Trifolium pratense.
White Clover	Trifolium repens.

Light Lands,

Timothy Grass	Pleum pratense.
Pacey's Perl. Ryegrass	Soliem perenne.
Cocksfoot	Dactylis glomerata.
Rib grass	Plantago lanceolata.
Dog's-tail	Cynosurus cristatus.
Mixed Fescues	Festuca duriuscula, Festuca, pratensis, &c.
Mixed Poas	Poa pratensis, Poa cerulea, &c.
Red Clover	Trifolium pratense.
White Clover	Trifolium repens.

The inferior description of clay lands in particular have been much improved by opening the furrow every autumn, about the month of November, by means of the furrow draining plough—an implement of simple construction, but one that cannot be too well known by the agriculturists. Its object is to cut a furrow slice out of the already existing furrow, 6 or 7 inches deeper, while its mould board, formed of wood, throws this slice 8 or 9 inches clear out on the right-hand side of the plough—thus forming a complete (we may say almost invisible) drain—which leys the land dry, and which discharges all superfluous water through the ensuing winter, while the furrow slice so removed is an addition to the compost heap. This simple implement has been of the greatest use here, and is strongly recommended to all farmers of wet clay lands.

Double Digging or Trenching.—Last year, during the distress of the hand-loom weavers, a large extent of ground of a very stiff clayey nature was trenched by those out of employment, in order to employ them. The deepness trenched was eighteen inches, and the inequalities of the surface were regularly reduced and attended to, and the grounds planted with potato and mangel wurtze', properly drilled and manured. Next year wheat will be sown, and the ground laid down again to permanent pasture.

Irrigated Meadows.—Here there are 18½ acres of water meadow on the ridge or bed system, and about 10½ on what is termed catch-work. It happens unfortunately that the water collected in a brook, descending through the lands to the Esk, is hardly sufficient, except in floods, for the purpose of complete irrigation. But the heavy crops produced even under imperfect watering, leave no doubt, however, of the utility of this branch of agriculture.

There are no other meadows here, and indeed the want of meadow ground is seriously felt over this district. In the general management of the pastures, care is taken to eradiate docks, thistles, &c., from the surface; and moles are destroyed whenever their workings appear.

ROTATION OF CROPS.

The plough rotation followed on these lands has been as follows—on

Gravelly soils.—1. *Turneps.*—Generally Swedes or Aberdeen yellows, consumed on the ground by sheep.
2. *Barley.*—Sown about the middle of April with seeds for pasture: the lands laid generally quite *flat* in the surface.
3. Young grass seeds depastured by sheep; generally ewes and lambs, from 1st May to 1st March.
4. Pasture.
5. Ditto.—Top-dressed this season with compost.
6. Pasture.
7. Pasture.
8. Pasture.
9. Oats out of ley.

Clay lands of the best description.—1. *Summer fallow*, or, if the season is suitable, globe turneps. In either case, the land thoroughly cleaned and manured. Turneps pulled and consumed in the yards by cattle.
2. *Wheat*, sown in autumn; and grass seeds for pasture sown in the succeeding spring: no stock of any kind allowed to depasture these seeds in the ensuing winter.
3. *Young pasture seeds*, depastured by sheep from 1st May to 11th November; but unless the ensuing winter

should happen to be particularly dry, no stock admitted after that period.

4. Pasture for the same period.
5. Ditto, ditto.—To-dressed with lime or compost.
6. Ditto, ditto.
7. Ditto, ditto.

If the lands now begin to show moss, so as to hurt the pastures, and render the grass later in coming to a full bite, they are generally ploughed for oats in the eighth year, about the middle of winter, so as to derive advantage from atmospherical influence, and are ploughed with a strong furrow.

Clays of the second-rate description.—1. *Bare fallow.*—Thoroughly cleaned, limed, and manured; the greatest pains being taken in all cases of clay land in the ploughing, so as to give the ridges a proper shape, to discharge all surface-water from the centre to the furrow.

2. *Wheat*, of the red kind, or oats, sown out with seeds for pasture.
3. *Seeds*, depastured by sheep from 1st May to 11th November.
4. Depastured by any kind of stock from ditto to ditto.
5. Depastured by any kind of stock from 1st May to 11th November. Top-dressed with lime or compost.
6. Ditto, ditto.
7. Ditto, ditto.
8. Oats out of ley.

These various courses of cropping have been found to suit the lands extremely well. The application of lime or compost to the third year's pasture, is a point never overlooked; for it is found to renovate the pasture grasses, and the grounds, after an interval of two or three years, break up in capital condition for oats

Wheat.—The wheat sown on the best descriptions of soil is invariably the white kind. That most in request for seed is understood to be what is called, in East Lothian, "Hunter's wheat." Wheat, after summer fallow, has always been found of the best quality and greatest weight to the acre; on inferior clays, red wheat is often sown. This variety is certainly well suited to such soils, and often fair average crops are obtained; but it is thicker in the husk, and therefore not so much in request with the corn-factors. The price in the market is generally one shilling per Carlisle bushel under the price of white wheat.*

Sowing.—The quantity of seed wheat to a statute acre sown broad cast, is from two and a half to three imperial bushels. The usual return, in favorable seasons, may be about from thirty-four to thirty-eight imperial bushels per acre.

Period of sowing.—On summer fallows, wheat is sown about the second week of September; and if wheat is tried after turneps, fed off on the lands by sheep, which is sometimes the case on lighter soils, the sowing being performed during the winter months in proportion as the turneps are consumed.

Tares or vetches.—Are seldom or never sown in this district. They answer, however, admirably in this district on fresh soils: they have invariably yielded a very large return of green food for soiling, and have been sown on purpose to be ready to be cut as green food, between the first and second crops of clover. Tares are never made into hay in this district; and indeed from the great quantity of succulent matter they produce, in a variable climate, the process of making them into hay would be attended with much risk and probably little advantage. They are very useful when consumed in summer, in soiling by cattle or horses, and thereby adding greatly to the dunghill—a point of paramount importance, but in no other light is their culture recommended.

Rape.—Rape succeeds here very well on lands in fair condition. An experiment on rather a large scale, was tried about eight years ago, of sowing in the month of July, no less a quantity than 120 acres of land of the first-rate quality—of loam intented for permanent pasture—with rape alone. The ground was previously thoroughly cleaned and limed, the rape and grass seeds sown, and the rape, immediately on arriving at maturity, eat off by sheep. The effect has answered, and the lands in question are the best pasture in the country at this moment.

Turneps.—The turneps sown here are the globe, the Aberdeen yellow, and the Swedish; all these varieties, when the seed is good and fresh, and the proper culture followed, have invariably succeeded here. The globe is consumed first, then the Aberdeen yellow, and lastly the Swedes. A number of other turnep seeds have been tried, such as the tankard, the green round, &c., but from experience, the three kinds first named are decidedly preferred.

Drill husbandry.—Turneps are always drilled here, and without a single case of failure. The turnep husbandry of East Lothian and Berwickshire is followed from first to last. The crops produced are generally heavy, sound, and good, even on stiffest description of clays. These crops are either consumed in the farm-yards by cattle, or on the ground by sheep. In eating off turneps by sheep, the practice here has always been at first to confine the flock on an extent calculated to support them fully for one week, and to give them a fresh break once a week afterwards, allowing the flock the range over the first portions of ground allotted to them. Hay, in sheep-haicks or cribs, is given along with turneps; Swedes are undoubtedly a most valuable crop to the farmer, and are the favorite food of all sorts of cattle and sheep. It is the custom in this establishment also to give the working horses, in the winter and spring months, a considerable proportion of Swedes daily; and the effect is to make the animals eat their oats with more avidity, and to render them fresh, and their coats more glossy. No other crops (potatoes, beans, and mangel wurzel, excepted,) are drilled here. On the light soils, however, there is not the least doubt that all the white crops may be drilled and hand-hoed with the greatest advantage; and it is in contemplation to resort to this mode of culture in future, as the most garden-like management, and as yielding a heavier and better description of grain, while at the same time all annual and other weeds are destroyed. Swedish turneps are sown in the latter end of April or beginning of May; globe and Aberdeen yellows during the first and second weeks of June. It is proper to mention, that the sheep generally fed off by turneps, are the best description of Choviot wedders from Sutherland, Roxburgh, and Dumfrieshire. Ewes and lambs on turnep, are seldom or ever attempted here. It would be reckoned very slovenly management to allow turneps to sprout in spring; they are always consumed when perfectly sound in the bulb, whether in the yards or in the fields.

Barley.—Barley succeeds turneps which were consumed on the ground by sheep: of course these crops can only follow with advantage in rotation on turnep soils. If the turneps have been properly managed, as already described by the eating them on the ground, the lightest soils will be compactly beat together by the treading of the flock. One furrow on such soils is considered in general sufficient, and the proper time of sowing is from 1st April to 20th May. It is here power to state, that barley after turnep should be sown *hot furrow*, that is to say, the sower should immediately follow the plough, and the harrow the sower; and probably, if the weather appears to set in drouthy, the grass seeds and roller should close the scene behind the harrows. When the process of barley-sowing is conducted in this way, a failure of crops has never taken place here. Pure barley alone is sown; and the old variety, called rough beer or big, seems, with much propriety, to be quite out of fashion in the district. These grounds seldom fail to produce barley of an excellent malting quality; indeed, the vale of the Esk is celebrated for the good quality of its barley crops.

Grass.—Grass never fails to succeed here after barley. If it is intended to cut the grass crop green for soiling, ryegrass, with a large proportion of red clover, and a small proportion of white, are sown. The soils here, from the management described, are generally fresh; and not one single case is remembered where the clover crops have failed altogther on any of these soils.

Ryegrass.—As a hay grass, is a very valuable variety; but when land is intended for permanent pasture, or for lying a number of years, ryegrass does not appear to be so well adapted as many other varieties for grazing purposes, and hitherto too much seed of this kind has been sown here on permanent pasture lands.

Fiorin Grass has never been cultivated here. It is probable, however, that practical agriculturists may, in many cases, entertain unfounded prejudices against this grass. A small fiorin meadow, as a trial, is in the progress of being laid out at present.

Sainfoin is never sown in this district, and clover is seldom or never sown without a mixture of grass seeds along with it. One experiment, on good land, of sowing red clover only, succeeded admirably.

Potatoes, under good management by the drill system, never fail here, even on the clay soils. No great quantity, however, is ever grown on this farm, except for the use of the family.

Mangel Wurzel has been cultivated for two or three year. The growing of this esculent is, however, quite new in the district, and is therefore only cautiously attempted at first. The result, hitherto, is favorable, although the Swedish turnep is supposed to be a crop of equal value. (*Remainder next week.*)

* A Carlisle bushel is equal to 3 A imperial measure.

Selection of Seeds.

A Mr. Gerrison, of Kentucky, in an article written for the American Farmer, says, "having for many years observed that some pumpkin, watermelon and squash vines ran 10, 12 and 15 feet before any fruit appeared, and that others would have fruit before they had run half that distance, I concluded that there was a natural reason for its being so. I therefore took a cucumber and split it lengthwise and sub divided it into 3 equal parts across the fruit, and kept the seeds carefully apart. Those on the end near the vine I marked Butt seeds, those from the centre, Middle seeds, and those from the end on which the bloom grew, Top seeds. These I planted separately on new ground well manured, I carefully attended to three hills from each part of the fruit divided as stated above, the hills about 12 feet apart. All the plants were alike flourishing; the vines from the butt seeds ran from four to six feet before fruit appeared: and these were small with a neak. The vines from the middle seeds were from four to six feet before fruit appeared; the vines were better, without a neck, and fourfold. The vine from the top seeds produced fruit, large, fine and in abundance, and the first fruit was on the third joint of the vine from the surface of the ground. I have continued to save seed from the top or bloom end, and now have cucumbers on the first and second joints."—*Boston Recorder.*

Materials and Sources of Manure.

We spoke in our last communication of the construction of a receptacle for manure—a place of general deposit for every substance, which might go to increase the compost heap. The next inquiry is, where shall we obtain the means of forming this heap, from what sources shall collections be made; what shall we throw into it or upon it?

Every organized body, which is capable of being dissolved and reduced to its original elements, is by such solution converted into manure. There is in nature an uninterrupted circle of life and death, of production, solution, and reproduction. The process is going on perpetually; it has gone on ever since the creation; and, for aught we can see, must continue to go on as long as the present system of nature shall endure. Animals and vegetables are sustained by the solution and decay of other animals and vegetables; and the former, having accomplished their term, go to the support of another class; and so on in an endless succession, to be limited only at the pleasure of the Creator. The vegetable or animal having passed into a state of decay is then prepared to be taken up as food by other animals and vegetables: and it is humorously observed by some one, yet with hardly more humor than truth, that man with extreme meanness seeks to withhold his proper contributions from this general reciprocity of usefulness; and though more than any other animal he avails himself of the means of others, making every part of nature tributary to his wants, selecting his food with peculiar fastidiousness, where he will, and as he will, he then carefully and meanly provides that his own body, though sustained always by the labors and contributions of others, should after he has done with it be buried so deeply in the earth, that its materials cannot be availed of for any farther purposes of utility.

Every vegetable and animal substance of every kind is convertible into the food of plants: and therefore in a state of solution or decay is to be considered as manure. There is another class of manures, which are called mineral manures, some portions of which are essential in vegetation; first as promoting the solution and comminution of vegetable and animal substance so as to prepare it to be consumed by plants; and further to assist in a degree in the formation of the vegetable structure as lime is necessary to form the shell of an egg; but of these we shall speak at another time. The food of plants is reservable into a simple substance by some denominated vegetable extract, by others *geine;* and this is found in all vegetable and animal substances; but it can be extraced and taken up by the living plants only when the animals or plants from which it is taken are in a state of solution or decay. Different vegetable and animal substances without doubt furnish this vegetable pabulum or food in different degrees and in various combinations; and different vegetables require it in different measures and forms. These are matters as yet very partially ascertained; and how far the human line can reach in sounding this profound depth cannot be conjectured. They are matters of scientific inquiry and philosophical investigation; and treasures of wisdom are in the course of being developed by the persevering labors of learned inquiries. But we leave them out of the question as we write only for plain farmers, whose experience and intelligent observation will in the main direct them right, and save them from any great mistakes. To them then the simple rules to be given in the case are, save every thing; waste nothing; and carry constantly to the heap every thing within your reach, which has answered its end and which is capable of being converted into manure.

Having prepared your place of deposit, as we said, in a saucer shape, and so formed the bottom that the fluids will be retained, overlay it with a bed of loam or of bog mud, which will absorb whatever liquid substances may pass down upon it.

The excrements of animals are ordinarily deemed of the highest value as containing the elements of vegetation in the most concentrated and active and soluble form. A farmer should save every thing of this sort as scrupulously as we would save gold dust. If he has sheep in a situation to be brought up at night without driving too far and without too much trouble they should be constantly yarded at night in places well littered with straw or refuse hay or leaves; and these when well saturated with their deposits should be carefully removed to the compost

heap. If he has cattle, cows, oxen, or horses, they too, excepting in some cases where the oxen have been in the yoke all day and you wish to give them their feed and repose in an open pasture by night, should be invariably tied in the barn at night over your manure vault, where their droppings both liquid and solid may be easily thrown or fall into the common receptacle. Or if your cattle for any reason should remain in an open yard, that yard should be well littered; and all the manure exposed to loss through the influence of the rain or sun, or air, should be as regularly as the day comes removed to the manure heap. Your hog-styes should be so formed and placed that their contents should be all saved likewise and frequently transferred to the general deposit. We know that some may boggle a little about this constant "removal of the deposits;" but they perhaps will not object to their being all placed in one great bank. Let your styes likewise be well littered: and abundant supplies of bog mud or, if nothing else is attainable, simple mould be thrown in. In the next place look after your poultry house and your pigeon house. The excrements of poultry constitute some of the most powerful manures that can be obtained. If you cannot induce them to make their roosts directly over your manure heap, then be sure that they make their roosts, where all their deposits may be saved. Next take care of your privy. Let this be so contrived by a swing door on the back side, and by having the building elevated and only a small excavation for the vault, that you can daily in summer and frequently at other times cover the contents with fresh mould, a pile of which ought always to be laid near at hand; and in this way the place will be prevented from becoming offensive, a matter so highly important to health and comfort; and the contents can be easily and without inconvenience transferred to the common receptable. Or else, which is by no means a bad plan, but in many cases highly eligible, let your privies be constructed in some corner of your barn or at the side of your barn, so that the deposits may go at once into the barn cellar. Next carefully save all your dish water, all you soap suds, all the emptyings of your chambers, all the water in which your hogs are killed; and indeed every thing of this sort; and let that go either by some tight drain directly into your manure cellar, or else regularly and scrupulously save it in tight barrels or tubs, and when these are full cause them to be carefully emptied upon your manure heap. Next go to the places in your pastures where your cattle are accustomed to collect either for shade or repose and carefully and frequently remove to your barn cellar all the deposits, which are accumulated here. Then go into the roads and highways and daily collect every thing of this sort, which may be found, as much as you would go into the road to pick up money, if you had known that money had been dropped there. The amount which may be accumulated in this way you will find at the close of the season vastly to exceed your expectations; and most amply to compensate the trouble or expense, which it may occasion.

We shall reserve our further observations on this subject until another number. We do not profess to offer any thing new or to have any thing new to offer on this homely subject; but we may at least hope that some plain suggestions will at least put our farmers upon inquiry whether there are not sources of supply within their reach, which they may have hitherto partially overlooked; and whether the continual complaints which we hear every where of the want of manure and the difficulty of procuring it may not be in some measure attributable to their own fault or neglect.—*New England Farmer.*

On the Nutritive qualities of Vegetable Esculents.

Persons who have the best intentions towards health, in proportioning their quantum of animal to vegetable food, are sometimes much deceived on that point, not being aware of the small quantity of solid matter which exists in a large bulk of a given esculent vegetable. The potato, the chief vegetable of the dinner table, varies in its composition according to the kind. We may safely assume, from the chemical analysis made by various individuals, that one quarter only or about 25 per cent. of their weight is solid vegetable nutriment. According to Vauquelin and Percy, 1 lb. of good bread is equal in nutritive power to 2½ lbs. of potatoes; and 75 lbs. of bread and 30 of meat, are equal to 300 lbs. of potatoes.

Cabbage has been examined by Schrader, and found to contain, in every hundred parts by weight, but 6 7-10 of solid matter; that is, 1 lb. contains less than 1 oz. of matter that can contribute nourirhment. This agrees nearly with the estimate of Sir H. Davy.

Greens, according to Vauquelin, contain 8 per cent. of solid matter capable of nourishing, or 1¼ oz. in the pound.

Cucumbers, according to the estimate of Dr. John, contain 97 per cent. of water, and of the remaining 3 per cent. only 2½ per cent. can prove nutritious.

Sir H. Davy estimates the nutritious portion of red beet root at about 15 lbs. in every hundred. He represents turneps to contain but 4 1-5 per cent. of solid nutritive matter; that is, 1 lb. contains less than three-quarters of an ounce. According to Vauquelin, however, the quality is 8 per cent. The latter chemist found that 3 lbs. of turneps and 4 lbs. of cabbage are equal in nutritive effect only to 1 lb. of potato.

Carrots, according to Davy, contain 9 4-5 per cent. of solid matter capable of nourishing; but Vauquelin's estimate is 14 per cent. Adopting a mean therefore, we find that 1 lb. of carrots supply nearly 2 oz. of solid nutriment. The quantity of solid matter attributed to the parsnep by Davy, is 99 per cent.; but that all this is nutritious may well be doubted.

Green peas may be inferred, from the analysis of Einhoff, to contain 70 per cent. of solid matter, but how much of this is nutritive it is hard to determine. Vauquelin says, they contain 93 per cent. Sir H. Davy estimates the solid matter of dry peas at but 57 per cent.; and if this be correct, it is not possible that green peas can contain any thing like the quantity by Vauquelin or even Einhoff. It is evident, however, that peas are rich in nutriment, and possess this peculiar quality, that about one fifth of the solid matter estimated in the analysis of Einhoff, partakes somewhat of the nature of animal matter, which, taking one kind with another, will average 35 per cent, of real nutriment.

Beans also contain this partly animal, partly vegetable substance. The solid nutritive matter contained in beans, according to Davy, is 57 per cent. the same as in peas. The beans examined by Einhoff, contained about 75 per cent. of matter which might be supposed capable of nourishing. According to Vauquelin, French beans contain 92 per cent. of nutriment; and modifying Einhoff's analysis of kidney beans, it would appear that they contain much about the same proportion.

Apples and pears are composed of similar ingredients, but in different proportions; the chief are acid, water, sugar, gum and woody fibre. In 100 part of apples by weight, there are no less than 86 parts of mere water, and but 13 of other ingredients capable of contributing a very inferior kind of nutrition.

Gooseberries contain 81 per cent. of water, and 8 per cent. of stone and woody matter, the remaining ingredients amounting to 11 per cent. consisting of acids, gum, sugar, lime, and albumen, all of which may prove nutritious in some degree.

The juice of lemons consists of mucilage, sugar, citric acid, and water, the last ingredient existing in it at the rate of 97½ per cent.

According to the analysis of Sir H. Davy, wheat contains 95 per cent. of nutriment; rye 79 per cent., and oats 76 per cent. Barley is less nutritious than wheat or even oats.—*New England Farmer.*

CROSSES.

We have heard the fear expressed by experienced breeders, that the individuals of the present stock of Short Horn Durham Cattle, are too nearly allied to propagate all their peculiar and distinctive qualities to their progeny. The remark was meant, and is to be taken, as a general one, applying as well to the stock elsewhere in America, as to that in Kentucky. The foundation of this fear seems to rest in the fact, that the race of cattle now most prized, the *Improved* Durham, being in some sense a mongrel race of very recent origin, its descendants are so closely connected, that they are in danger of degeneracy. It is feared, that the vigor of this race cannot be maintained, because we have not all those other races, by the union or crossing of which, the excellent qualities identifying and establishing it, were originally produced. The superiority of this race is owing, not to its possession merely of some peculiar quality in a higher degree than others, but that it unites more points of excellence. There are some breeds which yield more milk, and some which give more flesh; but this gives *almost* as much milk, *almost* as much flesh—presents more flesh where it is most valuable and less where it is least—fattens more kindly and rapidly—arrives at much earlier maturity, and is of far more docile disposition; and these advantages render it infinitely the best breed from which to stock our farms. The importance, therefore, of maintaining the purity and vigor of a race, combining so many and so great excellencies, is manifest; and, if the foundation of the fear to which we have alluded be well laid, our breeders should promptly avail themselves of the adequate remedy against the degeneracy implied. Whether that remedy, if need be for its employment, shall be found in the indigenous breeds of the country, or only by recurrence to the original breeds of England, whence this derived its excellencies and origin, are questions which they must investigate and decide upon for themselves. We do not pretend to offer any opinion on any of the questions involved, nor do we even own that we are impressed with the fears which have brought them up. The subject, however, is worthy of examination by intelligent breeders, and it is but respectful to the opinions of those entertaining these fears, to call attention to it. We invite, therefore, the expression through our columns of opinions held by breeders on the subject, trusting that whatever conclusions are arrived at, may be those best calculated to promote this great interest. In the calcareons lands of Kentucky, it is not likely that the business of rearing cattle will ever be superseded by more profitable pursuits. That description of soil is of all others best adapted to the growth of the grasses, while no country is more productive of corn. And should it be necessary to resort to the root culture as an additional aid, we can pursue it *ad infinitum*. There is no danger, therefore, that we shall be outstripped by any other state in the great race of improving the breeds and rearing the most and best cattle. We have great and ample means and abundant resources; and we have only to subject them to intelligent employment, to win a name for rearing fine cattle, as we already have for rearing horses, as widely acknowledged as the fame of the Arabian steed.—*Franklin Farmer.*

Rotation of Crops.

"It is an observation universally known, that the ground on which flax has been raised, is not fit for the same use till after an interval of several years. With the physical cause of this phenomenon we are yet unacquainted, and perhaps will remain so for ever. But although the arcana of nature lie far beyond our compehension, we may profit by attending to her operations; and we are allowed to frame theories, although demonstrations of their correspondence with realities surpass our capacities. I shall therefore venture to make a guess at the cause of the fact just mentioned.

"I will suppose that there are as many distinct principles, or conbinations of principles, engaged as agents in the work of vegetation, as there are species and varieties of vegetables; that these have their residence in the atmosphere, and are capable of being absorbed, changed and regenerated by the earth, especially when by the labors of the husbandman it is bared and exposed to their influence. I will next suppose, that generally an equal quantity of these are imbibed andready to administer to the rearing of any correspondent vegetable, whose seed may be deposited in the earth. If then only one kind of seed be sown on a given quantity of ground, it will exhaust that particular principle which nature has provided for its growth. This ground will then become unqualified for the raising of a similar crop, until time be given again to the soil to absorb from the air that principle which has been thus diminished in the quantity, which the soil has a tendency to receive, and the capacity to hold; in the mean time any other vegetable will there find its appropriate principle undiminished, and ready to do its office in raising it to maturity. What has been observed of flax, is supposed to be true, in some degree at least, as to most other cultivated annuals. Besides it is further supposed, I may say it is proved, that a crop of one kind, so far from unfitting, will rather qualify the earth the better for the production of another, if the succession be conducted as experience directs.

"If this theory then be admitted to be well founded, the advantages of rotations of crops can be sufficiently proved *a priori*; but there is no need of depending on persuasives of this kind; the experience of Europe, where necessity more eminently than in this country has become the mother of invention, has proved to the full conviction of all its practical farmers, that this is to be numbered among the best of modern improvements. A difference of climate and other circumstances does not present objections to our following them in this, that it does in other respects. I wish therefore to see my countrymen observing these rules in this particular with more exactitude."—*Cultivator.*

Experiment with Corn.

'I have succeeded with the Dutton corn admirably,' writes a Dutchess correspondent, 'and have planted it this year exclusively. I planted last year four different varieties,—the Dutton, early Canada, seed (from Poughkeepsie,) eight rowed white, and corn said to be Egyptian, eight rowed. The Dutton ripened two weeks before the others, and yielded better. The cob is very large and that would be objectionable, did it not take a good deal of corn to cover it.' It is well to remark, that after raising this corn eighteen years—the seed having been obtained from the gentleman whose name we gave it, we do not perceive any diminution in its early ripening property, which we ascribe to the fact, that we have always selected the earliest ripened ears for seed.—*Cultivator.*

Remedy against the Curculio.

The Curculio, or Green Moth, that commences its ravages on the plum in the first week in June, by depositing its eggs in plums, while the fruit is yet in an infant state, can be easily exterminated by preparing a mixture made in the proportion of a bushel of wood ashes to a quart of soot and half a pound of sulphur, applied in the morning while the dew is yet on the fruit, in sufficient quantity to coat the tree over. I have tried the remedy three years in succession, and have realized decided benefit.—*Yankee Farmer.*

Necessity of Education.

To every individual, education is important and valuable. It was once thought, and said, education makes rogues—observation has shown directly the contrary. We find in the State Prisons a large number that cannot read—many read very imperfectly—some read and write badly; none of them have ever employed the little they knew of letters to any purpose. There are very few who have a good education.

It is known that education promotes industry instead of idleness. Let the farmer be well educated, and his knowledge enables him to form the judgment of soils, and the best modes of cultivation and improvement. He labors himself, and enjoys the profits of his labors. He has, therefore, the greatest inducement to plan machinery to facilitate his labors, and to give care and attention to the means of making his farm productive. The farmer on the Continent of Europe, has labored for two thousand years, with the same ill-formed and inconvenient implements, always implying the hardest labor. He has not knowledge to invent machinery for himself. The learned regard not his toil. He enjoys a very small portion of the fruits of his labor, and therefore has not the stimulus to exertion. The farmer begins to enjoy the blessings of education. He cultivates his own soil. He has, therefore, improved almost every implement of husbandry. Labor to him is necessary—it is not degrading—it is honorable. To perform labor by machines, is a skillful application of knowledge to the practical purposes of life. Whoever has seen the shovel plough brought from Germany by the first emigrants—sometimes now found on the Mohawk river—and now in use in many parts of Germany, must have been struck with the inconvenient, ill-contrived machine, when compared to the common patent plough.

The simple invention of a horse-rake, saves three-fourths of the labor of gathering. The same may be said of the improved plough, scythe and threshing machine. A chemical knowledge of soil, manures, and stimulants is of great importance to every farmer.

Knowledge awakens attention, and the reward of attention is success. The mechanic arts are to be improved in the same way. Knowledge instructs the mechanic to facilitate his labors, and apply machinery to what was formerly accomplished only by the unarmed hand. Every branch of the mechanic arts has been improving, aided by knowledge.

In every mechanic's shop we find a machine of late invention. It even requires enlightened minds to adopt improvements.

Chancellor Livingston, when in France, observed that all the inhabitants of the wine countries were stooped forward, forming a very great curve of the spine. He observed them hoeing the vines with a hoe, the handle of which was about two feet long. It accounted for the deformity. He sent to America for a parcel of hoes with long handles. They used them a few days, and then threw them away, and returned to their short handled hoes, and thus preserved their crooked backs, and detailed them on their posterity.

What a vast number of farmers absolutely refused to use plaster of Paris, although the success was seen in almost every field around them, covered with rich crops, while their own were barren wastes.

Some one painted a pail, and a very well-informed woman got her pail painted; but very great numbers refused, and still scoured with soap and sand, the wood and iron.

It is knowledge that gives a man an acquaintance with himself, his powers, his rights and interest. He learns to judge for himself, to respect himself. He is, therefore, unawed by the proud, nor is he the victim of the cunning and selfish. His knowledge and virtue are all the qualifications he needs as a voter. His knowledge informs him of his own interest and the public good. His virtue secures his honesty and independence. The evils of government no sooner reach him, than he not only feels them, but looks about for a remedy, consistent with the public peace.

There never was a well educated mob—if so, what expense, what effort is too great to obtain so desirable a good. The subject commends itself to every private, and every public man in the country.

The inmates of our prisons and poor-houses are generally ignorant, and among the ignorant, intemperance prevails to the most fearful extent.

The question may be asked,—will not a just, parental feeling accomplish this important object? Experience has proved that the work cannot safely be left to parents, and therefore, government has undertaken to aid in the work. Parents have been found even to refuse the aid of the state. When the law was first passed to aid the school districts, many towns refused it. It required the power of government to establish the present valuable system. And we have reason to fear that the great end will never be attained until government enters heartily into the subject.

Xenophon gives an interesting account of the education of the Persian youth in his day. Much of it was mistaken, but the great design of educating the youth was good.

Sparta, one of the great republics, carried education among the free inhabitants, farther than any other people. It is true, the great principle on which that republic was founded, was false—because it assumed war to be the natural state of man, and educated her youth accordingly. But the effect of it was to preserve the state and form of government five hundred years.

The New England states, at an early period, entered heartily into the subject, and they enjoy the advantages now, in possessing the best generally informed people of any country in the world. And they have furnished most of the states with a vast number of professional men, and teachers of common schools.

The state of New-York has done something, and common school education has been extended to almost all the youth. Still the system is exceedingly imperfect, and capable of immense improvement.—*Herkimer Journal.*

"If I could but acquire an Education"

This is a remark almost as common amongst young men as another, "I wish I was rich;" and yet education is within the reach of every young man of ordinary capacity and determined industry. My worthy and eccentric friend, Grant Thorburn, very justly remarks, that "the grand drawback to every kind of improvement, is the common and degrading idea, that certain things are beyond our reach, whereas every thing is attainable by the employment of means, and nothing, not even the knowledge of a common laborer, without it." He says also, "let no man think any thing impossible for him. I speak from *experience;* I commenced seed-store with *fifteen dollars;* finding it thrive, I resolved it should be the first, and now I think it is, for while in Britain last winter, I saw nothing equal to it; therefore, I *again* say, let no man think that any thing is impossible, for this is the bane of all improvement."

He also says that the motto of a Scotch gardener is, "*second to none.*" So let it be yours, my young friends; and rely upon it, a fixed purpose to be among the first in your profession or calling, will certainly ensure to you, *prosperity and competence.*

Shall I tell you *how* to be first in your calling? Nothing can afford me more pleasure; and if one only in a thousand who reads what I may write upon the subject, should thereby become a more intelligent and virtuous member of society, in consequence of reading this work, I shall be amply, richly paid for my labor; as it is, in my opinion, of more importance to society to make one man virtuous and intelligent, then to make ten men wealthy.

If you would be intelligent, and indebted only to yourself for it, you must be industrious; devote your leisure first to labor, and the proceeds of that to books, and *not as I did,* to fine clothes and to frolicing. When you have a book divide your time—your *leisure,* I mean—between study and labor, that you may be able, when you have mastered and become familiar with the first, to obtain another. Adopt and pursue diligently this one simple rule, and you may rely safely upon it, to make you not only intelligent, but wealthy and virtuous. I never knew it to fail.—*Jeffersonian.*

Turnep Seeds.

5,000 LBS. Turnep Seeds, of first quality, of the following kinds, will be supplied at the very lowest wholesale rates, which will enable venders to make large profits in selling by the pound, and far larger when selling in smaller parcels. Purple topped Ruta Baga or Yellow Swedish Turnep, White Swedish Turnep, Large White Flat Field, White Norfolk, Early White Dutch, Yellow Dutch, Yellow Flat Field, Yellow Aberdeen, Large Yellow Bullock, Long Tankard, Yellow Stone, White Stone, Yellow Maltese, Dale's New Yellow Hybrid, Swan's Egg, Red Top or Red Round, Green Top or Green Round, and others.

Also, for sale at the lowest wholesale prices, every other kind of Garden, Flower and Agricultural Seeds.

A liberal credit to venders, and priced Catalogues will be sent to all who desire.

WM. PRINCE & SONS.

Flushing, N. Y., July 12, 1838.

N. B. 600,000 Chinese Morus multicaulis trees, 3 to 6 feet high, deliverable in October—and 200,000 Morus expansa, Brussa, and other choice varieties. jy21-3t

Seed Buckwheat,

A GOOD clean article for sale low by
June 23. REYNOLDS & BATEHAM.

Root Cultivation.

A LARGE supply of new and genuine Ruta Baga, Mangel Wurtzel, Sugar Beet and Orange Carrot Seed, just received at the Rochester Seed Store.

REYNOLDS & BATEHAM.

Rochester, April 21, 1838.

Farm for Sale.

THE subscriber offers for sale a FARM, lying near the Seneca turnpike, two miles west of Manlius village, and three and a half miles from the Erie canal, containing 250 acres of excellent land; rising 220 acres in high cultivation; the soil rich and suitable for every agricultural purpose. There are on the premises, besides the dwelling house, three small convenient houses for the use of hired men who have families. On the Farm are four large Barns, with Sheds and Stables sufficient for 2000 sheep, besides other stock. The orchards are extensive; the fruit select and excellent.

If desired, the farm could be conveniently divided to suit purchasers.

Also, A Farm containing 120 acres of land, about 100 acres in cultivation, lying in the town of Lafayette, 12 miles from the Canal at Syracuse, and about 12 miles from the farm above described. On this farm is a convenient Dwelling House, two large and excellent Barns, with sheds and stables for sheep and stock, a good Saw Mill, surrounded by a lot of valuable timber.

Terms of sale will be favorable. Letters (postage paid) will be attended to. DAVID ELY.

Manlius, Onondaga Co., N. Y., July 2, 1838.

☞ The subscriber will offer at private sale, in September next, 500 Saxon Sheep, of the finest fleece, bred from imported stock. [jy 7-4t] D. ELY.

New Arrival of Turnep Seeds.

WE have just received from England a large additional supply of TURNEP SEEDS, among which are the following kinds:

Ruta Baga, or Yellow Swedish,
Dale's Yellow Hybrid,
Yellow Bullock, Yellow Scotch,
Yellow Aberdeen, Red Round,
White Globe or Flat,
White Norfolk, Long Tankard,
Early White Flat Dutch,
White Stone, Yellow Stone,
Yellow Malta, Yellow Dutch.

☞ See descriptive list on page 198, current vol. Genesee Farmer. REYNOLDS & BATEHAM.

Rochester Seed Store, June 23, 1838.

Red Clover Seed,

A FEW bushels just received, for sale by
June 23. REYNOLDS & BATEHAM.

Farmers' Books.

NOTICES on the Sugar Beet, containing a description of the culture and preservation of the plant; also explanations of the process of extracting its Sugar. Price 25 cts.

A Manual of the art of making and refining sugar from Beets. Price 75 cents.

Cobb's Manual on the Culture of Silk.
Chaptal's Agricultural Chemistry.
The Complete Farmer, by Fessenden.
Fessenden's American Gardener.
A Guide to Orchardists.
Smith's Treatise on the Honey Bee.
A Treatise on Cattle.
Mason's Farriery.
Barnum's American Farriery.
Vols. 1st and 4th, Genesee Farmer, bound.

For sale by D. HOYT,
Rochester, May 26, 1838. Bookseller, 6 State st.

Fruit Trees for Sale.

THE subscriber respectfully informs his friends and the public, that he has for sale at his Nursery in Rochester, Monroe county, state of New-York, a large quantity of Fruit Trees, grafted and inoculated with the most approved kinds, now fit for transplanting, which he will sell on the most reasonable terms. SAMUEL MOULSON.

April 15, 1838.

N. B. CASH will be paid for a few thousand two years old APPLE TREES.

Monroe Horticultural Garden & Nurseries, Greece, Monroe County, N. Y.

THIS establishment now comprises over 20 acres, covered compactly with Trees and Plants in the different stages of their growth.

The subscriber offers to the public a choice selection of Fruit Trees, of French, German, English and American varieties, consisting of Apples, Pears, Plums, Peaches, Cherries, Apricots, Nectarines, Quinces, Currants, Gooseberries, Raspberries, Grape Vines, Strawberries, Ornamental Trees, Shrubs, Plants, Hardy Roses, Vines, Creepers, Herbaceous Perennial Plants, Bulbous Roots, Splendid Pæonies, Double Dahlias, &c. &c.

Also, a large collection of Green House Plants, of choice and select varieties, in good condition.

Orders respectfully solicited. Trees and Plants, when ordered, are carefully selected and faithfully packed, and if desired, delivered on the Canal, one mile from the Nursery, or at Rochester.

Orders for Mr. Rowe's Nursery received by the publisher of this paper.

Catalogues will be sent to every applicant, gratis, or may be had by calling at the office of the Genesee Farmer.

April 1, 1838. ASA ROWE.